

L 41743-66 EWT(1) IJP(c) GW

ACC NR: AP6020220

SOURCE CODE: UR/0056/66/050/006/1636/1640

AUTHOR: Khrapko, R. I.

ORG: Moscow Aviation Institute (Moskovskiy aviatsionnyy institut)

TITLE: Investigation of the structure of space time by analytic continuation of the equations of geodesics

SOURCE: Zh eksper i teor fiz, v. 50, no. 6, 1966, 1636-1640

TOPIC TAGS: space time, general relativity theory

ABSTRACT: The author presents a study of the structure of spaces in general relativity theory which admit of coordinate systems for which the metric tensor is of the form

$$ds^2 = -\varphi(r)dt^2 + dr^2/\varphi(r) + r^2d\Omega^2. \quad (1)$$

Unlike earlier studies, where complicated coordinate systems were used, overlapping the hypersurface on which there is a fictitious singularity of the metric (1), the author shows that a study of this kind can be carried out on the basis of the coordinate system of the metric (1) without going over to regular coordinate systems. The study of the structure of the space consists of constructing the image of its radius-time part and using analytic continuation of the equations of the isotropic geodesic lines through the hypersurface of the fictitious singularity of the metric (1). The particular spaces treated are the Nordstrom space, the Cutler space, and

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ACC NR: AP6020220

the de Sitter world. The author thanks Professor M. F. Shirokov and L. I. Bud'ko  
for a fruitful discussion. Orig. art. has: 8 figures and 4 formulas. 2

SUB CODE: 20/ SUBM DATE: 08Dec65/ ORIG REF: 006/ OTH REF: 005

2/2, *Pa*

KHRAPKO, R.I.

Steady quasi-unidimensional magnet~~o~~-gas dynamic flows, assuming  
finite conductivity. Zhur. tekhn. fiz. 32 no.9:1063-1071 S '62.  
(MIRA 15:9)

(Magnetohydrodynamics) (Electric conductivity)

BODAN, A.N.; MASKAYEV, A.K.; KHRAPKO, V.I.

Production of bitumen from Valeny oil. Nefteper. i neftekhim.  
no. 3:21-23 '64. (MIRA 17:5)

1. UkrNIIGiproneft'.

BODAN, A.N.; MASKAYEV, A.K.; KHRAPKO, V.I.

Investigating the coking of products of the noncompressor oxidation of petroleum residues. Neft. i gaz. prom. no.4:50-52 0-D '64  
(MIRA 18:2)

KHRAPKOV, A.A.

Force of the action of the filtrating water on the structure-  
foundation system. Sbor. dokl. po gidr. VNIIG no.4:69-83 '62.  
(MIRA 18:7)

S/196/62/000/014/032/046  
E194/E155

AUTHOR: Khrapkov, G.Ye.

TITLE: Experience of burning Ekibastuz coals at undertakings and power stations of the Ural, and rational methods of using them

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika, no.14, 1962, 9, abstract 14 G 54. (Mashinostr. i energ. Kazakhstana. Nauchno-tekhn. sb., no.5 (15), 1961, 40-48)

TEXT: Experience is described of burning Ekibastuz coals at some power stations (Central Ural GRES, Krasnogorsk and others), in pulverized form, and with stokers at others (Chelyabinsk GRES, Turbine Engine Works TETs and others). Data for this coal are: ash ( $A_p$ ) = 35-39%; water content ( $W_p$ ) = 6-10%; volatiles ( $V$ ) = 26-30%; calorific value ( $Q_H^p$ ) = 3800-4100 kcal/kg. The ash is of high melting point (over 1500 °C) and is abrasive. It is concluded that it is advisable and economically effective to burn Ekibastuz coals at power stations with chamber-type furnaces and drum-type ball-mills, and in the pure form (not mixed with other  
Card 1/2

Experience of burning Ekibastuz ...

S/196/62/000/014/032/046  
E194/E155

fuels). It must be ground to a residue of 18-20% on an 88 mesh sieve instead of 38-45% as with brown coal. The effectiveness of using Ekibastuz coal increases as the distance of transport is reduced, i.e. it is best to use it where it is mined and in the neighbouring regions of central, north and north-east Kazakhstan. It is inefficient to use the coal in stoker-type furnaces (even when the coal is specially prepared for combustion by preliminary crushing and grading) because of the high loss due to mechanically incomplete combustion (20-27% and above), and because of reduction in the steam capacity of the boilers. It is recommended that Ekibastuz coal should be burned at the KARGRES-1, the TETs of the Aktyubinskiy zavod ferrosplavov (Aktyubinsk Ferrous Alloy Works) of the Balkhashskiy i Dzhezkazganskiy gornometallurgicheskiye kombinaty (Balkhash and Dzhezkazgan Mining-Metallurgical Combines). The annual economy from this will be 15 million roubles with a capital pay-off time of 3 - 5 months.

[Abstractor's note: Complete translation.]

Card 2/2



ALEKHIN, F.K.; ALOTIN, L.M.; ALTAYEV, Sh.A.; ANTONOV, P.Ye.;  
BEVZIK, Yu.Ya.; BELEN'KIY, D.M.; BRATCHENKO, B.F.,  
gornyy inzh.; BRENNER, V.A.; BYR K., V.F.; VAL'SHTEYN,  
G.I.; YERMOLENOK, N.S.; ZHISLIN, I.M.; IVANOV, V.A.;  
IVANCHENKO, G.Ye.; KVON, S.S.; KODYK, G.T.; KREMENCHUTSKIY,  
N.F.; KURDYAYEV, B.S.; KUSHCHANOV, G.K.; MASTER, A.Z.;  
PREOBRAZHENSKAYA, Ye.I.; ROZENTAL', Yu.M.; RUDOV, I.L.;  
RUSHCHIN, A.A.; RYBAKOV, I.P.; SAGINOV, A.S.; SAMSONOV,  
M.T.; SERGAZIN, F.S.; SKLEPCHUK, V.M.; USTINOV, A.M.;  
UTTS, V.N.; FEDOTOV, I.P.; KHRAPKOV, G.Ye.; SHILENKOV, V.N.;  
SHNAYDMAN, M.I.; BOYKO, A.A., retsenzent; SUROVA, V.A.,  
ved. red.

[Mining of coal deposits in Kazakhstan] Razrabotka ugol'-  
nykh mestorozhdenii Kazakhstana. Moskva, Nedra, 1965. 292 p.  
(MIRA 18:5)

KHRAIKOV N. A.

TA 17014

USSR/Hydrology - Minimum Flow

Dec 48

"The Problem of Studying Minimum Flow," N. A. Khrapkov

"Meteorol i Gidrol" No 6, pp 91-93

Criticizes present method of studying minimum flow because it ignores transfer of surface water into alluvia and sub-bed flow. Singles out hydrometric data on minimum runoff of local administrations in the Asiatic USSR as particularly bad. Minimum runoff studies require cooperation with Min of Geol in order to use their ground-water specialists for consultation. Submitted 5 Mar 47.

170146

KHRAPKOV, V.A., inzh.

Location survey on a stereo model made with the multiplex  
plotter. Trudy TSNIIS no.49:138-146 '63. (MIRA 16:9)

KONDRATENKO, V.T., inzh.; KHRAPKOV, V.A., inzh.

Laying-out railroad lines according to stereographic models  
of local surface features. Transp.stroi. 10 no.2:36-38  
F '60. (MIRA 13:5)

(Railroads--Track)

VOIKOV, V.V.; KHRAPKOV, V.A.

Photogrammetric bridging on the SPR-2 stereoprojector in case of  
large-scale surveying. Geod. i kart. no.11:23-26 N '64.  
(MIRA 18:2)

KHRAPKOV, V.A.

Alignment on stereomodels in route surveys. Geod.i kart. no.1:50-  
58 Ja '63. (MIRA 16:2)

(Route surveying)

KHRAPKOV, V.A., inzh.

Location survey of new railroad lines by means of a stereomodel  
prepared with a multiplex. Sbor.trud.LIIZHT no.199:62-72 '62.

(MIRA 16:2)

(Railroads—Surveying) (Aerial photogrammetry)

KONDRATENKO, V.T.; KHRAPKOV, V.A.

Compilation of anaglyphic mosaics. Geod. i kart. no.8:52-55  
Ag '63. (MIRA 16:9)

(Photogrammetry)



PETROV, M.A.; NORMAN, E.A.; VOLODIN, A.P.; DENISOV, V.A.;  
 KOCHKONOGOV, V.P.; BEGAM, L.G.; BARANOV, M.A.; TAVLINOV,  
 V.K.; YENIKEYEV, G.Sh.; BARANOVA, A.I.; KUDRYAVTSEV,  
 G.P.; MALYAVSKIY, B.K.; CHEGODAYEV, N.N.; SURIN, V.S.;  
 GONIKBERG, I.V., retsenzent; ENGEL'KE, V.A., retsenzent;  
 KHRAPKOV, V.A., retsenzent; AL'PERT, G.A., retsenzent;  
 ALEKSEYEV, B.N., retsenzent; SKLYAROV, A.A., retsenzent  
 ALEKSEYEV, Ye.P., retsenzent

[Railroad surveying; reference and methodological hand-  
 book] Izyskaniia zheleznykh dorog; spravochnoe i metodi-  
 cheskoe rukovodstvo. Moskva, Transport, 1964. 495 p.  
 (MIRA 18:1)

1. Babushkin. Vsesoyuznyy nauchno-issledovatel'skiy in-  
 stitut transportnogo stroitel'stva. 2. Leningradskiy go-  
 sudarstvennyy proyektno-izyskatel'skiy institut Gosudar-  
 stvennogo proizvodstvennogo komiteta po transportnomu  
 stroitel'stvu SSSR (for Gonikberg, Engel'ke, Khrapkov).
3. Sibirskiy gosudarstvennyy proyektno-izyskatel'skiy in-  
 stitut Gosudarstvennogo proizvodstvennogo komiteta po  
 transportnomu stroitel'stvu SSSR (for Alekseyev, YeP.).
4. Moskovskiy gosudarstvennyy proyektno-izyskatel'skiy  
 institut Gosudarstvennogo proizvodstvennogo komiteta po  
 transportnomu stroitel'stvu SSSR (for Al'pert).

KHRAPKOVA, M.I., kandidat meditsinskikh nauk (Leningrad, ul. Kalyayeva,

~~889-154~~).

Bilateral ovarian hemorrhage. Vest.khir. 78 no.2:127-128 F '57.

(MLRA 10:3)

1. Iz 1-y kafedrykhirurgii (sveduyushchiy - dotsent A.S.Chechulin)  
Leningradskogo gosudarstvennogo ordena Lenina instituta usovershen-  
stvovaniya vrachey im. S.M.Kirova.

(OVARIES, infarction

bilateral (Bus))

USSR / Microbiology - General Microbiology.

F

Abs Jour: Ref Zhur-Biol., No 9, 1958, 38331.

Author : Togunova, A. I., Khrapkova, N. V., Fridenshteyn, A. Ya.

Inst : Not given.

Title : Controlled Modification of Tubercle Bacilli.

Orig Pub: V sb.: Izmenchivost mikroorganizmov, M. Medgiz, 1956, 124-139.

Abstract: Virulent strains No. 1 and 12 bovine type tubercle bacilli were used. Variant No. 137 was obtained as a result of subjective strain No. 1 to a subbacteriostatic quantity of antibiotic D (which possesses capillary active properties). In subsequent cultivation and selection of colonies 6 new variants were isolated. Some had reduced virulence, and one had a marked immuno-

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USSR / Microbiology - General Microbiology.

F

Abs Jour: Ref Zhur-Biol., No 9, 1958, 38331.

Abstract: genicity (protective index 85%). Cultural properties after many transfers remained stable for a period of 4 years. Two other variants with considerably weakened virulence were obtained as a result of prolonged holding of strain No. 2 in two transfers with weak concentrations of streptomycin (3 units) and were isolated from colonies "35 raised" and "35 flat." Their growth differed only slightly from that of the initial strain. In experiments on guinea pigs and rabbits, the strains proved to be virulent. Numerous transfers on guinea pigs did not cause any increase in virulence. The protective index in strain "35 raised" is 96.9%, and in strain "35 flat" 93.8%. A comparison of immunogenic prop-

Card 2/3

55

KHRAPKOVA, N.V.

Concentrations of commercial fishes and fish plankton in the  
Korf-Karaginskiy area. Trudy Inst.ocean. 43:285-294 '61. (MIRA 14:6)

(Korf Bay—Fishes)

(Karaginskiy Gulf—Fishes)

KHRAPKOVA, N.V.

Studies on the reproduction of anchovies and sardines in the  
Maritime Territory. Trudy Inst.ocean. 43:309-319 '61.

(MIRA 14:6)

(Maritime Territory—Anchovies)  
(Maritime Territory—Sardines)  
(Reproduction)

KHRAPKOVA, N.V.

Spawning of commercial fish in Kronotskiy Gulf. Trudy Inst.-  
okean. 36:123-142 '59. (MIRA 15:4)  
(Kronotskiy Gulf--Fishes)

KHRAPKOVA, N.V.

Materials on the development and distribution of larvae and young  
halfbeaks (*Oxyporhamphus micropterus*). Vop. ekol. 5:235-236 '62.  
(MIRA 16:6)

1. Institut okeanologii AN SSSR, Moskva.  
(Halfbeak (Fish)) (Larvae--Fishes)

IL'INSKIY, O.B.; FIKS, V.B.; KHRAPKOVA, S.I.

Effect of temperature on the bioelectric activity of Pacinian  
bodies. Dokl. AN SSSR 164 no.1:227-229 S '65.

(MIRA 18:9)

1. Institut fiziologii im. I.P. Pavlova AN SSSR. Submitted  
July 23, 1964.



KHRAPKOVA-KOVALEVSKAYA, N.V.

Materials on the reproduction, development, and distribution of larvae and fry of the flying halfbeak *Oxyporhamphus micropterus* (Val.) (Pisces, Oxyporhamphidae). Trudy Inst. okean. 62:49-61 '63. (MIRA 17:2)

ALEKSEYEVSKIY, Yevgeniy Vladimirovich; GOLITS, Rudolf Karlovich; MUSAKIN, Aleksandr Petrovich; KHRAPKOVSKIY, A.I., redaktor; KRLIKH, Ye.Ya.,  
tekhnicheskii redaktor.

[Quantitative analysis] Kolichestvennyi analiz. Izd.5-oe, perer.  
A.P.Musakinym. Leningrad, Gos.nauchno-tekhn.isd-vo khim.lit-ry,  
1955. 630 p. (MIRA 9:5)

(Chemistry, Analytic--Quantitative)

KHRAPKOVSKIY, A. I.

✓ Work of D. V. Struve (1849-1908) in the field of analytical chemistry. B. Ya. Rosen and A. I. Khrapkovskii. *Zhurnal Khimicheskoy Lab.* 21, 875-8 (1955).—A bibliography of 11 references is included.  
G. M. Kosolapoff

①

KHRAPKOVSKIY, A.I. (Leningrad)

*Some remarkable properties of aqueous solutions.* Khim. v  
shkole 11 no.1:63-68 Ja-P '56. (MLRA 9:2)  
(Solution (Chemistry))

KHRAPKOVSKIY, A. I.

3  
Mikhail Aleksandrovich Il'inski (Greetings on the hundredth anniversary of his birth). A. I. Khrapkovskii. Zaredskaya Lab. 22, 1139-40 (1956).—A biographic sketch of the discoverer of the 1-nitroso-2-naphthol method of Co detn., the 1st application of an org. compd. to inorg. analytical chemistry. W. M. Sternberg  
27  
MT

ALEKSEYEVSKIY, Yevgeniy Vladimirovich; GOL'TS, Rudol'f Karlovich; MUSAKIN, Aleksandr Petrovich; KHRAPKOVSKIY, A.I., redaktor; ERLIKH, Ya.Ye., tekhnicheskiiy redaktor

[Quantitative analysis] Kolichestvennyi analiz. Izd. 6-oe, ispr.  
Leningrad, Gos.nauchno-tekhn.isd-vo khim. lit-ry, 1957. 630 p.  
(Chemistry, Analytic--Quantitative) (MLBA 10:7)

KHRAPOVSKIY, A.I.

ROZEN, B.Ya., KHRAPOVSKIY, A.I.

Outstanding Russian chemist. Priroda 46 no.3:81-82 Mr 157.

(MLRA 10:3)

1. Vsesoyuznyy nauchnyy mashinostroitel'nyy institut (Leningrad)  
(Menshutkin, Nikolai Aleksandrovich, 1842-1907)

KHRAPKOVSKIY, E. Ya.

The third prize (imeni D. K. Chernov) was awarded to Engineer E. Ya. Khrapkovskiy (Moscow Institute of Chemical Engineering) for his work "Primary Structure and Properties of Grey Iron Components".

Results of the 1958 Competition for Obtaining imeni D. K. Chernov and imeni N. A. Minkevich Prizes, Metallovedeniye i termicheskaya obrabotka metallov, 1959, No. 6, pp 62-64



**AUTHOR:** Gulyayev, B. B.  
**SOV/24-58-4-37/59**  
**TITLE:** Conference on Crystallization of Metals (Sovetskaniye po Kristallizatsii Metallov)  
**PERIODICAL:** Investigativnyi Zhurnal Vsesoyuznogo Nauchno-Issledovatskogo Tsentra Akademi Nauk SSSR, Oddeleniye Tekhnicheskikh Nauk, 1958, Nr. 4, pp 155 - 155 (USSR)

**ABSTRACT:** This conference was held at the Institut mashinovedeniya AN SSSR (Institute of Mechanical Engineering of the A.S.S.R. USSR) from June 28-July 1, 1958. About 400 people participated and the participants included specialists in the fields of metals, metallurgy, crystallography, physics, welding, heat, physical chemistry, mathematical physics and other related subjects. In addition to Soviet participants, foreign visitors included Professor D. Czkl (East Germany) and M. Chvorakovich (Czechoslovakia). This conference on crystallization of steel was the fourth conference relating to the general problem of the theory of foundry processes.

Conference on Crystallization of Metals

SOV/26-58-A-37/39

Crystallization of Cast Iron. I. A. Starobov and N. V. Polovina in their paper "Influence of the Crystallization of Cast Iron on the Properties of the Metal" reported on experimental data relating to the conditions of solidification and the structure of castings made of magnesium-inoculated iron; they presented a theory of the crystallization of magnesium-inoculated iron. I. A. Starobov, in his paper "Investigation of the Process of Formation of Spheroidal Graphite in Iron", considered the influence of various factors and characteristics of the metal on the formation of graphite inclusions. Professor D. Chikl (Great Gurnoy) presented a paper on crystallization of graphite (cast iron) which was illustrated by extensive metallographic photographs. I. M. Belimovich and A. Zhelezov dealt with the formation of intercrystalline liquation of silicon and its influence on the structural liquation of cast iron. I. V. Starobov and I. M. Zhelezov dealt with the mechanism of formation of centres of crystallization of graphite in castings made of white iron and the influence of the speed of crystallization on the distribution of alloying elements between the individual phases of iron-carbon alloys. I. V. Starobov proposed a method of hardening of alloys from the liquid state using an extremely high speed of cooling; this method enabled conservation of carbon in iron which correspond to the liquid state. I. M. Zhelezov dealt with the investigation of crystallization of primary structure and the properties of quasi-eutectic grey iron.

BERG, P.P., doktor tekhn.nauk; BIDULYA, P.N., doktor tekhn.nauk; GRECHIN, V.P., kand.tekhn.nauk; DOVGAEVSKIY, Ya.M., kand.tekhn.nauk; ZHUKOV, A.A., inzh.; ZINOV'YEV, N.V., inzh.; KRYLOV, V.I., inzh.; KUDRYAVTSEV, I.V., doktor tekhn.nauk; LANDA, A.F., doktor tekhn.nauk; LEVI, L.I., kand.tekhn.nauk; MALAKHOVSKIY, G.V., inzh.; MIL'MAN, B.S., kand.tekhn.nauk; SOBOLEV, B.F., kand.tekhn.nauk [deceased]; SKOMOROKHOV, S.A., kand.tekhn.nauk; STEPIN, P.I., kand.tekhn.nauk; USHAKOV, A.D., kand.tekhn.nauk; FRIDMAN, L.M., inzh.; KHRAPKOVSKIY, E.Ya., inzh.; TSYPIN, I.O., kand.tekhn.nauk; SHKOL'NIKOV, E.M., kand.tekhn.nauk; POGODIN-ALEKSEYEV, G.I., prof., doktor tekhn.nauk, red.; BOLKHOVITINOV, N.F., prof., doktor tekhn.nauk, red.toma; LANDA, A.F., prof., doktor tekhn.nauk, red.toma; RYBAKOVA, V.I., inzh., red.izd-va; SOKOLOVA, T.F., tekhn.red.

[Handbook on materials used in the machinery industry] Spravochnik po mashinostroitel'nym materialam; v chetyrekh tomakh. Pod red. G.I.Pogodina-Alekseeva. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry. Vol.3. [Cast iron] Chugun. Red.toma N.F.Bolkhovitov i A.F.Landa. 1959. 359 p. (Machinery industry) (Cast iron) (MIRA 13:1)

KHRAPKOVSKIY, E.Ya.; MARIYENBAKH, L.M., doktor tekhn. nauk, red.

[Structure and strength of thin-walled castings made of  
gray cast iron] Struktura i prochnost' tonkostennykh ot-  
livok iz serogo chuguna. Moskva, Mashinostroenie, 1965.  
114 p.  
(MIRA 18:3)

KHRAPOV, A.

Our practices in pushing barges with crude petroleum. Rech. transp.  
24 no.8:18 '65. (MIRA 18:9)

1. Kapitan-2-y pomoshchnik mekhanika teplokhoda "OT-801".

3 (5)

AUTHORS:

Marinov, N. A., Khrapov, A. A.,  
Khubul'dikov, G. I.

SOV/20-128-4-47/65

TITLE:

Upper Devonian - Lower Carboniferous Continental Deposits of  
Eastern Mongolia

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 4, pp 806 - 808  
(USSR)

ABSTRACT:

Upper Devonian deposits were discovered in Eastern Mongolia for the first time in 1955 in the region of the settlement of Khara-Ayrak (350 km south-eastwards from the town of Ulan-Bator). They form several rather large areas which stretch in the northeast - and west-east directions. The authors classified these deposits as an independent suite - the Kharaayraskaya on the basis of the composition of the rocks, their depositional environment, the interrelations to other rock bodies, the connection with a definite structural facies zone, as well as of the character of the flora. Their rocks fill an old tectonic depression of a graben type. The deposits of this suite seem to have formed at the foot of an old pre-Upper Devonian uplift. Their rocks are relatively little dislocated. The suite may be lithologically rather distinctly divided into 2 subsuites:

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Upper Devonian - Lower Carboniferous Continental  
Deposits of Eastern Mongolia

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a lower shaly sandstone - and an upper effusive one. The lower suite is again divided into three horizons: a lower, a middle, and an upper one. The lower horizon consists of 6 units, 6, 3.5, 1.5, 7.0, 42.0, and 35.0 m thick, totally 95 m. The boundary between the lower and the middle horizon is tentatively drawn on the basis of the occurrence of plant remains in the latter. The rocks of the middle horizon are very widely distributed, compared to those of the lower one. A. A. Khrapov collected here well preserved flora fossils. V. A. Khakhlov determined among these fossils *Porodendron tenerium* (Nath.) Zal., *Knorria* sp., and other species. The upper horizon is up to 140-150 m thick. Rocks of volcanic origin occur here in considerable quantity as felsites, tuffs, and tuffsandstones. All 3 horizons total approximately 500 m. The effusive lower suite rests conformably upon the shaly sandstone suite and is distributed northwards from Khara-Ayrak. It consists only of acid effusives and their derivatives. The rock body was subjected to plicative and disjunctive dislocations. Small folds (some hundred meters wide) were thus produced. Quartz porphyries are most widely distributed here. The thickness of the effusive suite may be

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Upper Devonian - Lower Carboniferous Continental  
Deposits of Eastern Mongolia

SOV/20-128-4-47/65

estimated with respect to orientation at 500 m. Thus, the total thickness of the continental Devonian deposits at Khara-Ayrak amounts to approximately 1000 m. V. A. Bobrov gives the thickness of the shaly sandstone suite as 1740 m, in contrast to the second and third author who assume a thickness of 500 m. M. F. Neyburg determined from the plant remains additionally collected by Bobrov several plant species which she consequently believes to be also characteristic of the Upper Devonian epoch and the lower part of the Lower Carboniferous epoch. Ye. M. Andreyeva determined 2 species of spores here which are also characteristic of the Lower Carboniferous epoch. The age of the lower suite mentioned above is precisely defined by the data to be Upper Devonian or Lower Carboniferous. This shows that the effusive lower suite most probably belongs to Lower Carboniferous alone.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut gidrogeologii i inzhenernoy geologii (All-Union Scientific Research Institute of Hydrogeology and Geological Engineering)

Card 3/4

KHASIN, R.A.; KHRAPOV, A.A.

New ultrabasic belts of southern Mongolia. Dokl. AN SSSR  
165 no.4:907-910 D '65. (MIRA 18:12)

1. Submitted June 21, 1965.



KHRAPOV, A.A.

Some debatable questions of the ancient glaciation of Pamir-Alay. Izv. AN SSSR. Ser. geog. no.2:78-81 Mr-Apr '62.

(MIRA 15:3)

1. Ministerstvo geologii i okhrany neдр SSSR.  
(Pamir-Alay--Glacial epoch) (Pamir-Alay--Moraines)

MILYANOVSKIY, A.G., nauchnyy sobraznik; KHRAPOV, A.P.; NIKOL'SKIY, B.A.;  
REPIN, V.M.

Conditions for improving the hygienic quality of milk.  
Veterinariia 42 no.5:96-98 My '65. (MIRA 18:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut veterinarnoy  
sanitarii (for Milyanovskiy). 2. Glavnoye upravleniye veterinariei  
Ministerstva sel'skogo khozyaystva SSSR (for Khrapov, Nikol'skiy,  
Repin).

AUTHORS: Khrapov, A. Ya, and Chernobrovkin, V. P. 126-2-29/30

TITLE: Measurement of the limit wetting angles of iron on a graphite base. (Izmereniye krayevykh uglov smachivaniya chuguna na grafitovoy podkladke).

PERIODICAL: "Fizika Metallov i Metallovedeniye" (Physics of Metals and Metallurgy), Vol. IV, No. 2, 1957, pp. 381-383 (USSR).

ABSTRACT: Due to imperfect experimental techniques it is at present impossible to determine directly the specific free surface energy of a solid body at its surface of contact with a liquid,  $\sigma_{sl}$ . Therefore, various authors investigating the shape and dimensions of crystals as a function of the influence of surface-active admixtures, base their investigations on the surface tension relative to gas,  $\sigma_{sg}$ , assuming that there is an analogy between  $\sigma_{sg}$  and  $\sigma_{sl}$ . To verify the character of the changes of  $\sigma_{sl}$  and  $\sigma_{sg}$  for iron the authors measured experimentally  $\sigma_{sg}$  and the boundary wetting angles of iron on a graphite base. They assumed that the limit wetting angle of a melt drop on a solid base in the atmosphere of an inert gas can serve as a criterion of the interphase tension  $\sigma_{sl}$ . In fact, the smaller the limit wetting angle, the smaller will be the surface tension and the better the melt will wet the surface of the base and vice versa. The limit wetting

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Measurement of the limit wetting angles of iron on a graphite base. (Cont.) 126-2-29/30

angles were measured according to a method described by Levin, A.M. (6), the essence of which is to determine the contour of the metal drop on the screen, by means of a system of lenses, from the light emission of the metal at elevated temperatures. The results are summarised in a table, p. 383. With increasing sulphur contents the limit wetting angles decrease from  $115^\circ$  for 0.1% S to  $90^\circ$  for 0.5% S. Comparison of the measured limit angles with the earlier measured surface tension permits the conclusion that for iron a general qualitative relation exists between changes in  $\sigma_{sg}$  and the limit wetting angle and thus also between  $\sigma_{sg}$  and  $\sigma_{sl}$ . It is mentioned that the here described measurement of the limit wetting angle of iron on a graphite base can be applied very extensively in works laboratories. There are 1 sketch, 1 table, 6 Slavic refs.

Card 2/2

SUBMITTED: May 14, 1956.

ASSOCIATION: Institute of Metallurgy, Ural Branch, Ac. Sc. USSR. (Institut Metallurgii, Ural'skogo Filiala AN SSSR.)

AVAILABLE:

KHRAPOV, A.Ya., Cand Tech Sci -- (diss) "On the problem  
of the modification of pig irons." Stalinsk, 1958, 17 pp  
(Min of Higher Education USSR. Siberian Metallurgy Inst  
im Sergo Ordzhonikidze) 150 copies (KL, 32-58, 109)

- 41 -

SOV/137-58-11-23439

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 11, p 228 (USSR)

AUTHORS: Khrapov, A. Ya., Chernobrovkin, V. P.

TITLE: The Effect of Inoculants on the Surface Tension of Cast Iron (Vliyaniye modifikatorov na poverkhnostnoye natyazheniye chuguna)

PERIODICAL: Izv. vyssh. uchebn. zavedeniy. Chernaya metallurgiya, 1958, Nr 3, pp 42-51

ABSTRACT: The authors studied the effects of the addition of Fe-Si, Al, and Si-Ca on the surface-tension characteristics of cast iron (CI). CI containing 3.5% C, 1.14% Si, 0.57% Mn, 0.05% S, and 0.07% P served as the initial material. The summation of Ca and Si contents amounted to 4.64%. Fe-Si and Si-Ca were introduced into the CI in the form of small particles 2-3 mm in diameter. Al was introduced in the form of an Al wire on an Fe core. All inoculants were introduced into the CI at temperatures ranging from 1340 to 1370°C. The surface tension (ST) of the CI was measured by the method of maximum bubble pressure. It became evident that the addition of Fe-Si, Al, and Si-Ca alters the ST of the CI to a considerable degree. This indicates that Si, Al, and Ca are surface-active elements. The

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The Effect of Inoculants on the Surface Tension of Cast Iron

SOV/137-58-11-23439

addition of the Fe-Si to CI always results in a reduction of the ST, the latter being closely connected with processes of adsorption of Si in the surface layer. The action of both Al and Ca is more complex; an initial increase in ST of the CI is attributable to a chemical reaction of these elements with O<sub>2</sub> and S, substances characterized by their low ST. A subsequent decrease in the ST of CI is related to the adsorption of these substances in the surface layer. The cessation of the inoculation effect, which occurs as the temperature is increased in conjunction with protracted periods of soaking, is attributable to the deactivation of the inoculants. Bibliography: 18 references.

A. S.

Card 2/2

SOV/137-58-12-25194

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 12, p 165 (USSR)

AUTHORS: Khrapov, A. Ya., Chernobrovkin, V. P.

TITLE: Effect of Addition of Metallic Calcium on the Surface Tension of Iron  
(Vliyaniye prisadki metall'cheskogo kal'tsiya na poverkhnostnoye  
natyazheniye chuguna)

PERIODICAL: Izv. vyssh. uchebn. zavedeniy. Chern metallurgiya, 1958, Nr 4,  
pp 69-74

ABSTRACT: A study was made of the effect of the addition of metallic Ca on the surface tension of iron (I) and on the form of graphite with isothermal soaking and increase in temperature. I of the following composition (in %) was used: C 3.5, Si 2.1, Mn 1.0, S 0.05, and P 0.073. Metallic Ca in the form of shavings (0.2 - 1.0%) was introduced into the I heated to 1300 - 1400 C. The surface tension in the I was measured by the method of the maximum pressure in bubbles. It was found that addition of Ca produces at first a sharp increase and then a decrease in the surface tension of I. This phenomenon is caused 1) by the chemical reaction of Ca with the surface-active elements O<sub>2</sub> and S, and 2) by its partial dissolution in the I. The crystallization

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*Siberian Metallurgical Inst. & Inst Metallurgy Ural Gft AS USSR*

SOV/137-58-12-25194

Effect of Addition of Metallic Calcium on the Surface Tension of Iron

of I treated with Ca proceeds under qualitatively new physical conditions and, therefore, results not only in a finer I structure but also in the spheroidization of the graphite.

A. S.

Card 2/2



KHRAPOV, A.Ya., inzh.; CHERNOBROVSKIY, V.P., inzh.

Distribution of elements in liquid cast iron before and after  
adding magnesium. Izv. vys. ucheb. zav.; chern.met. no.5:41-49  
My '58. (MIRA 11:7)

1.Sibirskiy metallurgicheskiy institut i Institut metallurgii  
Ural'skogo filiala AN SSSR.  
(Liquid metals--Analysis) (Cast iron--Analysis) (Magnesium)

AUTHOR: Khrapov, A. Ya.

SOV/126-6-2-13/34

TITLE: On the Spheroidisation of Graphite in Magnesium-Inoculated Iron (O sferoidizatsii grafita v chugune, obrabotannom magniyem)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958, Vol 6, Nr 2, pp 281-288 (USSR)

ABSTRACT: Marincek, B. and Grütter, K. (Refs. 1 and 2) have shown that the higher the surface tension the more compact will be the shape of the graphite. Other authors (Refs. 3-9) state that the super-cooling of the iron is of decisive importance in the process of spheroidisation. The author of this paper believes that an increase of the surface tension is necessary but is an insufficient condition for changing radically the shape of the precipitating graphite and the super-cooling of the iron is slight and apparently depends on the surface tension. Therefore, the author studied the influence of addition of metallic magnesium on the surface tension of iron and on the shape of the precipitating graphite. The heats were effected in a cryptol furnace in magnesite crucibles of 800 g capacity. The magnesium was introduced

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SOV/126-6-2-13/34

On the Spheroidisation of Graphite in Magnesium Inoculated Iron

directly into the crucible inside iron casings with holes. The surface tension of the liquid iron was measured in the crucible by the method of maximum pressure of the neutral gas in the bubbles, using argon as the operating gas. Iron with the following composition was investigated: 3.5% C, 2.1% Si, 1.0% Mn, 0.05% S and 0.073% P. At first the temperature dependence of the surface tension of the initial cast iron was studied (graph, Fig.1, p 281) and the obtained results were used as a basis for evaluating the changes of the surface tension of the iron caused by adding magnesium in the further experiments. The following were measured: the surface tension of cast iron inoculated with magnesium and subsequently heated, Fig.2; the surface tension of cast iron inoculated with magnesium and subsequently cooled (Fig.3); the surface tension of cast iron with an addition of 0.4% Mg and subsequent inoculation with a 0.2% ferrosilicon with subsequent isothermal annealing (Fig.4). In Figs.2-4, curves 1 refer to the temperature changes during the tests, the straight lines 2 are the changes of the surface tension of the cast iron in the initial state and the

Card 2/4

SOV/126-6-2-13/34

On the Spheroidisation of Graphite in Magnesium Inoculated Iron

curves 3 are changes of the surface tension of the magnesium-inoculated cast iron. During the tests samples were taken for metallographic analysis and these were cooled in water and in air. The temperature of the cast iron at the instant of introduction of magnesium usually amounted to 1350-1370°C. Furthermore, the limit wetting angles on a graphite base were measured; the experiments were effected in an atmosphere of purified argon with specimens on which the surface tension had been measured. The assumption was accepted that the boundary wetting angle can be used as a criterion of the inter-phase tension at the boundary crystal-liquid. From the obtained results the conclusion is derived that the high surface tension of the magnesium-inoculated iron "purified" from surface-active admixtures (oxygen and sulphur) is a necessary condition for the spheroidisation of the graphite. However, this is not the only condition since the shape of the graphite inclusions can change only in the case of changes of the ratio of the speeds of growth in various directions, which depends on the adsorption of magnesium on the face edges

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SOV/126-6-2-13/34  
On the Spheroidisation of Graphite in Magnesium Inoculated Iron  
of the graphite single crystal.  
There are 7 figures and 31 references, 22 of which are  
Soviet, 5 English, 3 German, 1 French.

ASSOCIATION: Institut metallurgii Ural'skogo filiala AN SSSR  
(Institute of Metallurgy, Ural Branch of the Ac.Sc. USSR)

SUBMITTED: January 22, 1957

Card 4/4

1. Iron alloys--Surface tension 2. Graphite--Metallurgical  
effects 3. Graphite--Precipitation 4. Magnesium--  
Metallurgical effects

BELIYAKOV, R.S., kand. tekhn. nauk; SERGIYEVSKIY, V.P., dotsent; ZOTKIN, I.A.,  
kand. tekhn. nauk; TIMOFEEV, A.A., kand. tekhn. nauk; KHRAMOV, A.Ya.,  
kand. tekhn. nauk; APON'KIN, V.A., inzh.; BEDAREV, V.I., inzh.;  
MATVEYENKO, I.S., inzh.

"Foundry alloys" by P.P. Zhevtunov. Reviewed by R.S. Belyakov and  
others. Izv. vys. ucheb. zav.; chern. met. 2 no.4:157-161 Ap '59.  
(MIRA 12:8)

1. Zaporozhskiy mashinostroitel'nyy institut (for Belyakov).
2. Sibirskiy metallurgicheskiy institut (for all except Belyakov).  
(Foundry machinery and supplies) (Alloys)  
(Zhevtunov, P.P.)

18.3200,18.800

77146

SOV/148-59-9-16/22

AUTHOR: Sergiyevskiy, B. P. (Docent), Khrapov, A. Ya. (Candidate of Technical Sciences)

TITLE: The Effect of Quality of Initial Cast Iron on Properties of Castings

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya, 1959, Nr 9, pp 141-144 (USSR)

ABSTRACT: The mechanical properties and gas saturation of charcoal and coke cast iron were investigated. Chemical composition of cast iron is shown in Table 1.

Table 1. Chemical composition of coke and charcoal cast iron

ORGANIZATION CAST IRON	C	Si	Mn	P	S
ЛК-4	4.60	1.75	0.90	0.28	0.05
ВЛ-1	4.25	0.86	0.64	0.15	0.04
ВЛ-2	4.32	0.64	0.74	0.15	0.04

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The Effect of Quality of Initial Cast  
Iron on Properties of Castings

77146

SOV/148-59-9-16/22

The melting was done in two laboratory cupolas 450 mm and 200 mm in diameter. The temperature of cast iron at tapping was 1,280 to 1,320° C. The coke consumption amounted to 15.0%. The limestone used as a flux contained (%): CaO, 52.21; SiO<sub>2</sub>, 3.02; MgO, 0.56; (Fe<sub>2</sub>O<sub>3</sub> + Al<sub>2</sub>O<sub>3</sub>), 1.06%. Weight of limestone charge was 5% of the total weight of the metal. The gas saturation of cast iron was determined by the method of hot extraction using a mercury vacuum unit described in Ref. 6 (Shizokov, N. I. and Zarvin, Ye. Ya., Zovodskaya laboratoriya, Nr 10, 1952). The mechanical properties shown in Table 5 were determined in samples 30 mm in diameter, 300 mm long, according to the All-Union State Standard (GOST) B1412-42S. As a result of experiments the following conclusions were drawn: the charcoal and coke cast iron produced in different blast furnaces show no appreciable difference either in gas saturation or in mechanical properties. Therefore, there is no need of adding the charcoal cast iron to the cupola charge. M. G. Ignat'yev (Engineer) participated in the work. There are 5 tables; and 7 Soviet references.

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The Effect of Quality of Initial Cast.  
Iron on Properties of Castings

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SOV/148-59-9-16/22

Table 5. Mechanical properties of charcoal and coke cast irons

DESIGNATION CAST IRON	FIRST MELT IN THE LARGE CUPOLA		SECOND MELT IN THE SMALL CUPOLA	
	TENSILE STRENGTH ( $\frac{kg}{mm^2}$ )	HARDNESS H <sub>B</sub>	TENSILE STRENGTH ( $\frac{kg}{mm^2}$ )	HARDNESS H <sub>B</sub>
JK-1	14,5 - 16,2	158-162	11,7-15,3	143-162
BJL-1	12,1-13,2	142-160	11,5-13,0	139-155
BJL-2	11,0-13,0	136-145	10,6-12,0	128-146

ASSOCIATION: Siberian Metallurgical Institute (Sibirskiy metallurgicheskii institut)

SUBMITTED: March 18, 1959

Card 3/3

KHRAPOV, A.Ya.; VOLKOV, V.M.

Casting of steel parts without risers. Lit.proizv. no.3:43-44  
Mr '62. (MIRA 15:3)  
(Founding)

KHRAPOV, A. Ya.; VOLKOV, V. M.

Casting of steel members without deadhead. Ratsionalizatsiia  
no.9:24 '62.

KHRAPOV, A.Ya.; BEDAREV, V.I.

Undercooling of magnesium-treated cast iron. Izv. vys.  
ucheb. zav.; chern. met. 5 no.10:131-136 '62. (MIRA 15:11)

1. Sibirskiy metallurgicheskiy institut.  
(Cast iron—Metallurgy)

KHRAPOV, A.Ya.

Eighth conference on the theory of founding processes.  
Izv. vys. ucheb. zav.; chern. met. § no.10:203-207 '62.  
(MIRA 15:11)

1. Sibirskiy metallurgicheskiy institut.  
(Founding--Congresses)

KHRAPOV, A.Ya.; BEDAREV, V.I.

Behavior of magnesium cast iron components held in liquid state.

Lit.proizv. no.4:16-18 Ap '63.

(MIA 16:4)

(Cast iron—Analysis)

(Liquid metals—Analysis)

BEDAREV, V.I.; KHRAPOV, A.Ya.

Possibility of magnesium diffusion in cast iron. Izv. vys.  
ucheb. zav.; Chern. met. 6 no.12:171-177 '63.

(MIRA 17:1)

1. Sibirskiy metallurgicheskiy institut.

KHRAPOV, A.Ya.; BEDAREV, V.I.; Primal uchastiye KLIMINSKIY, Ye.V.

Effect of ferrosilicon additions on the crystallization of magnesium  
cast iron. Izv. vys. ucheb. zav.; chern. met. 6 no.10:134-138  
'63. (MIRA 16:12)

1. Sibirskiy metallurgicheskiy institut.



TARAN, N. I.; KHRAPOV, A. Ya.

Determining the minimum fluidity of metals and alloys providing  
for the filling up of foundry molds. Izv. vys. ucheb. zav.;  
chern. met. 7 no.6:149-155 64. (MIKA 17:7)

1. Sibirskiy metallurgicheskiy institut.

KHRAPOV, A. Ya.; BEDAREV, V.I.; BATURIN, V.G.

Spectral determination of magnesium in cast irons. Zav. lab.  
30 no.6:706 '64 (MIRA 17:8)

TARAN, N.I.; KHRAPOV, A.Ya.

Computing fluidity of metal by parameters of the foundry mold.

Izv. vys. ucheb. zav.; chern. met. 8 no.2:151-155 '65.

(MIRA 18:2)

1. Sibirskiy metallurgicheskiy institut.

KHRAPOV, A.Ya.; TARAN, N.I.

Calculating the narrowest cross section of a gating system providing  
for the metal filling of a mold. Izv.vys.ucheb.zav.; chern.met. 8  
no.8:136-144 1965. (MIRA 18:8)

1. Sibirskiy metallurgicheskiy institut.

KHRAPOV, A.Ya.; BEDAREV, V.I.; BAZHENOV, B.M.

Feeding castings with high-strength iron. Lit. proizv. no.9:40  
S '64.  
(MIRA 18:10)

KOSTROV, Kh.N.; KHRAPOV, B.I.

Determination of the coefficient of thermal diffusivity of metals.  
Zav.lab. 30 no.4:466-467 '64. (MIRA 17:4)

1. Bryanskiy institut transportnogo mashinostroyeniya.

KEGLIN, B.G.; KHERAPOV, B.I.

Temperature measurement at a certain point of the surface in  
nonstationary friction. Zav. lab. 30 no.8:968-969 '64.

(MIRA 18:3)

1. Bryanskiy institut transportnogo mashinostroyeniya.

AUTHOR: Khrapov, G.A., Candidate of Pedagogical Sciences, Docent SOV/3-58-11-21/38

TITLE: The Training of Specialists in Chemistry to be in Keeping With Their New Tasks (Khimicheskuyu podgotovku spetsialistov - na uroven' novykh zadach). More Laboratory Exercises (Bol'she laboratornykh zanyatiy).

PERIODICAL: Vestnik vysshey shkoly, 1958, Nr 11, pp 57 - 58 (USSR)

ABSTRACT: The author emphasizes the importance of chemistry for a thorough training of agricultural engineer-mechanizers, and finds that the study of chemistry at the institutes of mechanization and electrification has been unsatisfactory in recent years. Since chemistry is an experimental subject, it is reasonable to demand that at least the same amount of time be set for laboratory exercises as for lectures. He points to the deficiencies in the general chemistry curriculum and considers it necessary to revise it. The sections devoted to polymeric and synthetic compounds, should be kept separately, and sections constituting a repetition of secondary school program should be eliminated. The author also speaks of improving the organization of the exchange of experience in methodical and scientific work and consi-

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SOV/3-58-11-21/38  
The Training of Specialists in Chemistry to be in Keeping With Their New Tasks. More Laboratory Exercises.

ders it useful to convene an All-Union conference of professors and instructors in chemistry with the participation of VASKhNIL and teachers of chemistry in secondary schools. He refers to the article by Professor I.N. Futilova and Docent G.A. Raytsyn [Ref 1] "Bringing the Tuition in Chemistry Nearer to the Specialty" and agrees with their views. There is 1 Soviet reference.

ASSOCIATION: Moskovskiy institut mekhanizatsii i elektrifikatsii sel'skogo khozyaystva (Moscow Institute of Agricultural Mechanization and Electrification)

Card 2/2

KHRAPOV, G. S. (Vet.)

"Paratyphoid of the young of horses in horse-herds maintenance."

SO: Veterinariia 29 (1), 1952, p. 23

North Caucasian Trust of Horse Plants

KHRAPOV, I.

A single "warning coupon" for driver licenses instead of three.  
Avt. transp. 37 no.9:40-41 S '59. (MIRA 12:12)

1. Starshiy gosavtoinspektor Gosavtoinspektsii Glavnogo upravleniya  
milititsii Ministerstva vnutrennikh del SSSR.  
(Automobile drivers' licenses)

GOROKHOVSKIY, S., podpolkovnik militsii; KHRAPOV, I. mayor militsii

Changes in unified regulations. Za rul. 19 no. 12:25 D '61.  
(Traffic regulations) (MIRA 14:12)

KHRAPOV, I.O.

Standardization of lubricants. Transp. i khran. nefti i  
nefteprod. no. 1:35-37 '64. (MIRA 17:5)

1. Leningradskoye upravleniye Glavnogo upravleniya po transportu  
i snabzheniyu neftiyu i nefteproduktami ESFSR.

KHRAPOV, I.O.

Supplying the national economy with petroleum oils and lubricants.  
Transp. i khran. nefti no.1:34-35 '63. (MIRA 16:9)

1. Leningradskeye upravleniye Glavnogo upravleniya po transportu  
i snabzheniyu nefi'yu i nefteproduktami RSFSR.

KUDACHOV, I.O.

Perfecting and broadening centralized supply of petroleum products to consumers. Transp. i khran. nefti i nefteproduktov. 1985. (1985. 10:3)

1. Leningradskoye upravleniye Glavnoy upravleniye po dostavke i snabzheniyu nefi'yu i nefteproduktam' RSFSR.

KHRAPOV, M. M.

KHRAPOV, M. M. -- "Investigation of the Forces in Rolling of Beams on a Universal Rolling Machine." Cand Tech Sci, Central Sci Res Inst of Technology and Machine Building (TsNITMash), 25 Jan 54. (Vechernyaya Moskva, 15 Jan 54)

SO: SUM 168, 22 July 1954



SOV/124-58-3-3466

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 3, p 126 (USSR)

AUTHORS: Khrapov, M. M., Korolev, A. A., Pobedin, I. S. Prikhod'ko, I. F.

TITLE: Experimental Investigation of Force Parameters During the Rolling of Models of Wide-flanged Beams (Eksperimental'noye issledovaniye silovykh parametrov pri prokatke modeley shirokopolochnykh balok)

PERIODICAL: V sb.: Prokatn. stany. Nr 8, Moscow, Mashgiz, 1956, pp 38-54

ABSTRACT: Total and specific pressures as well as the torque required in the rolling of shaped products consisting of wide-flanged beams measuring 75x75 mm were measured on the laboratory mill TsKBMM-23 at the TsNIITMash (Central Scientific Research Institute of Technology and Machinery). Carbon pressure sensors were employed in the measurements. The results of the measurements are substantially at variance with calculated data (ref. V sb.: Prokatn. stany. Nr 8, Moscow, Mashgiz, 1956).

Card 1/1

K. N. Shevchenko

SOV/137-57-11-21284

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 11, p 94 (USSR)

AUTHORS: Pobedin, I.S., Khrapov, M.M.

TITLE: Theoretical Determination of Moments in the Rolling of Shapes  
(Teoreticheskoye opredeleniye momentov pri prokatke fason-nykh profiley)

PERIODICAL: V sb.: Prokatn. stany. Nr. 8, Moscow, Mashgiz, 1956,  
pp 55-68

ABSTRACT: If the total pressure (P) of the metal (M) on the rolls (R) is transmitted via a number of cylindrical and tapered surfaces (S), it becomes impossible to determine rolling moments by the formula in general use. In this case, the total MP on the R is examined separately for each element of S of a complex pass, while the resultant P of each element of the S is broken down into its major components: Q, the resultant of normal MP on the RS passing through the R axis; F, the resultant of the tangential forces of M action on the R (the resultant of the forces of friction at work in the zone of forward slip and zone of lag). The total moment that must be transmitted to horizontal R is determined from the condition that the forces of

Card 1/3

SOV/137-57-11-21284

# Theoretical Determination of Moments in the Rolling of Shapes

MP on cylindrical and tapered RS be directed along a normal to the RS and provide no additional moment. In this case, the expression for the total rolling moment will comprise only the moments due to forces of friction:

$$M_{roll} = 2 P_{neck} \mu R_1 + (P_{neck} + P_2 \tan \alpha) \mu_0 a_1 + (P_2 \mu / \cos \alpha) [(R_1^2 - 2\rho_1^2 + r_1^2) / (R_1 - r_1)]$$

This equation serves to define the rolling moments of beams having high relative flange widths. The first term in the equation represents the sum of moments due to forces of friction in the neck mountings of horizontal R. The second term is the sum of moments due to forces of friction upon the cylindrical S of horizontal R, arising as a result of the fact that the metal of the beam web lags the R. The third member is the difference in the moments due to the forces of friction on the tapered S of horizontal R. Where high beams are involved (high web and small relative flange width), one may encounter conditions in practice in which  $\rho_1 > R_1$ . In this case there is a complete meshing of the external radius of the R with the metal of the beam web and complete slippage along the beam flange. The equation for total rolling moment in this case takes on the following form:  $M_{roll} =$

$2(P_{neck} + P_2 \tan \alpha) \mu_0 a_1 + Q_1 R_1 - 2P_2 \mu (R_1 + r_1) / 2$ . The first term in this equation is the sum of the moments due to forces of friction in the neck mountings of the horizontal R. The second term is the sum of moments due to the forces of

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SOV/137-57-11-21284

Theoretical Determination of Moments in the Rolling of Shapes

engagement of the horizontal RS and the metal of the beam web. The third term is the sum of the moments due to the forces of friction on the tapered S of horizontal R arising due to the fact that the flange metal slips forward over the R.

B.Ye.

Card 3/3

SOV/137-57-10-19051

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 10, p 89 (USSR)

AUTHORS: Turkin, D.S., Khrapov, M.M.

TITLE: Wide-flanged Beam Production Methods (Tekhnologiya proizvodstva shirokopolochnykh balok)

PERIODICAL: V sb.: Prokatn. stany Nr 8, Moscow, Mashgiz, 1956, pp 77-86

ABSTRACT: The rail-and-structural mill with a universal stand (US) installed at one of the plants in the South of the USSR to roll wide-flanged beams (WB) consists of 2 lines: The first is a reversing two-high 900-mm breakdown stand; the second, for finishing, consists of 3 stands: Two three-high 850-mm stands and one special universal 4-roll stand with 2 driving horizontal and 2 driven vertical rolls, the axes of which lie in a single vertical plane. The slope of the inside edges of the beam flanges is 6%. To roll WB, an ingot heated in a soaking pit is rolled on a blooming into a 250x300-mm billet, which is then delivered to the 900 mill without further heating, whence the shaped billet goes to the first stand of the 800 mill, whereupon after 3 passes it goes to the second stand of the 800 mill.

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SOV/137-57-10-19051

#### Wide-flanged Beam Production Methods

(one pass) and then to the US. A single pass is made in the latter, whereupon the finished beam is delivered by table to the hot saws. A specialized tonnage universal mill consisting of a 1475-mm blooming, 3 US, and two auxiliary two-high stands, the whole arranged in 3 consecutive lines, namely, roughing, intermediate, and finishing, is now in the process of design and manufacture for the purpose of rolling WB from 200 to 1000 mm high and with parallel flanges. The roughing and intermediate lines have two working stands each, viz., one universal and one auxiliary. The finishing line consists of a single US. The universal stands have horizontal 1350-mm diam driving rolls and 1100-mm driven vertical rolls. The weight of the equipment of the mill as a whole, together with the equipment for finishing the beams, is > 20,000 t; the power of the main drives is ~40,000 hp. A description is presented of the process developed by TsNIITMASH for the rolling of WB up to 650 mm high from ingots weighing 6-22 t. The rough shape of the beam is produced in 19 to 37 passes on the blooming. After the ends have been cut off, the beam section is rolled in the roughing line of the mill for 7-15 passes, including the auxiliary stand. The strip is then rolled on the intermediate line, where an auxiliary stand is mounted past the US. The strip then goes to the finishing line, where the beam flanges are given their vertical position in a single pass. The resulting beam undergoes hot

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Wide-flanged Beam Production Methods

straightening, is cut on the saw, cooled in the cooler, straightened on a roll leveler or in a horizontal straightening press and, when necessary, is cut into lengths of 6 m or more on cold saws. Expressions to assist in determining the dimensions of the starting billet for the rough beam and for calculating the pass grooves are presented.

V. Zh.

Card 3/3

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 3, p 104 (USSR) SOV/124-58-3-3255

AUTHORS: Iroshnikov, A. N., Pobedin, I. S., Khrapov, M. M.

TITLE: Distribution of Specific Roll Pressures in the Roll-forming of Profiles of Various Shapes (Raspredeleniye udel'nykh davleniy pri prokatke fasonnykh profiley)

PERIODICAL: V sb.: Prokatn. stany. Nr 8, Moscow, Mashgiz, 1956, pp 87-106

ABSTRACT: In roll-forming profiles of various shapes, in this case wide-flange beams (H-beams), the metal is plastically deformed under very complex conditions, a fact which even with considerable simplifications makes the mathematical statement of the problem difficult. The authors have set themselves the task of obtaining at least an approximate solution by means of breaking down the problem and considering the web and the flanges separately. To satisfy the boundary conditions at the ends of the deformation zone, the authors introduce sustaining and elongating boundary stresses. Interaction between the flanges and the web is not taken into consideration.

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3  
KHRAPOV, M.M., kandidat tekhnicheskikh nauk; KOROLEV, A.A., kandidat  
tekhnicheskikh nauk; POBEDIN, I.I., kandidat tekhnicheskikh nauk;  
PRIKHOD'KO, I.F., inzhener.

Experimental investigation of force parameters during the rolling  
of wide-flanged beam models. [Trudy] TSNITMASH no.83:32-54 '56.  
(MLRA 10:9)

(Rolling mills--Testing) (Mechanics)

POBEDIN, I.S., kandidat tekhnicheskikh nauk; KHRAPOV, M.M., kandidat tekhnicheskikh nauk.

Theoretical determination of moments in section rolling. [Trudy]  
TSHIITMASH no.83:55-68 '56. (MLRA 10:9)  
(Rolling (Metalwork)) (Mechanics)

KHRAPOV, M.M., kandidat tekhnicheskikh nauk; BARANOV, N.M., inzhener.

Forces acting on the rolls during rolling of wide-flanged beams.

[Trudy] TSNIITMASH no.83:69-76 '56.

(MLRA 10:9)

(Rolling (Metalwork)) (Force and energy)

KHRAPOV, M.M.

TURKIN, D.S., inzhener; KHRAPOV, M.M., kandidat tekhnicheskikh nauk.

Technology of wide-flanged beam production. [Trudy] TSNIITMASH  
no.83:77-86 '56. (MLRA 10:9)  
(Rolling (Metalwork)) (Steel, Structural)

*KHRAPOV, M.M.*

EROSHNIKOV, A.W., kandidat tekhnicheskikh nauk; POBEDIN, I.S., kandidat tekhnicheskikh nauk; KHRAPOV, M.M., kandidat tekhnicheskikh nauk.

Distribution of specific pressure in rolling shaped sections.  
[Trudy] TSNIITMASH no.83:87-106 '56. (MLRA 10:9)  
(Rolling (Metalwork)) (Mechanics)

KHRAPOV, M.N., inzh.; LAPUSHKIN, S.A.

Basic traction and thermal characteristics of the  
Czechoslovak ChM2 diesel locomotive. Vest.TSNII  
MPS 19 no.5:25-28 '60. (MIRA 13:8)  
(Czechoslovakia--Diesel locomotives)

KHRAPOV, M.N., inzh.; LAPUSHKIN, S.A., inzh.

Traction and fuel consumption characteristics of the VMEL diesel  
switcher. Vest. TSNII MPS 20 no.2:24-27 '61. (MIRA 14:3)  
(Diesel locomotives)

KHRAPOV, M.N., inzh.; SIROTENKO, V.D., kand.tekhn.nauk

Stability of characteristics of a TE3 diesel locomotive under  
operation conditions. Vest.TSNIIMPS 21 no.7:37-40 '62. (MIRA 15:12)  
(Diesel locomotives—Testing)



KHRAPOV, Mitrofan Nikolayevich; LAPUSHKIN, Sergey Alekseyevich;  
DOLGANOV, A.N., inzh., retsenzents; SOBAKIN, V.V., inzh.,  
red.; VOROTNIKOVA, L.F., tekhn. red.

[Locomotive tests on the line] Opytnye poezdki s lokomotivami.  
Moskva, Transzheldorizdat, 1963. 183 p. (MIRA 16:3)  
(Locomotives—Testing)

SOV/124-58-8-9202 D

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 8, p 125 (USSR)

AUTHOR: ~~Khrapov, V.G.~~

TITLE: The Pressure Exerted on the Supporting Timbering of Sloping Mine Excavations (Davleniye na krep' naklonnykh vyrabotok)

ABSTRACT: Bibliographic entry on the author's dissertation for the degree of Candidate of Technical Sciences, presented to the Mosk. in-t inzh. zh.-d. transp. (Moscow Institute of Railroad Engineers), Moscow, 1958

ASSOCIATION: Mosk. in-t inzh. zh.-d. transp. (Moscow Institute of Railroad Engineers), Moscow

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KHRAPOV, V.G., insh.

Pressure on supports during inclined tunneling. Trudy MIIT no.101:  
3-34 '58. (MIRA 11:6)

(Mining engineering)

KHRAPOV, V.G., kand.tekhn.nauk

Effective schemes of underground subway stations. Trudy MIIT no.126:  
143-169 '60.

(MIRA 13:10)

(Subways)